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10/029,261	12/28/2001	Jae Woo Lyu	P-0312	4115
34610	7590	12/13/2004	EXAMINER	
FLESHNER & KIM, LLP			PHAN, HANH	
P.O. BOX 221200			ART UNIT	
CHANTILLY, VA 20153			PAPER NUMBER	
			2633	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/029,261

**Applicant(s)**

LYU, JAE WOO

**Examiner**

Hanh Phan

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 7-11, 14-16, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Rideout et al (US Patent No. 5,880,863).

Regarding claims 1, 10 and 26, referring to Figures 2, 3A, 3B, 4A, 4B and 4C, Rideout teaches an optical repeater system (Fig. 2), comprising:

a plurality of optical repeaters (i.e., remote unit 1 to remote mote unit N, Fig. 4A) coupled in series, each configured to receive and convert a radio frequency (RF) analog signal to a first baseband digital electrical signal, sum the first baseband digital electrical signal and a second baseband digital electrical signal transmitted from a previous optical repeater in the series to generate an optical output signal (see Fig. 4A, col. 7, lines 28-60 and col. 8, lines 47-55); and

a base station (i.e., base station 22, Fig. 2) configured to receive and demodulate the optical output signal of a last one of the plurality of optical repeaters in the series (see Fig. 4B).

Regarding claims 2, 11 and 15, Rideout further teaches the second baseband digital electrical signal transmitted from a previous optical repeater in the series is a previously summed signal (Figs. 2 and 3A, col. 6, lines 42-62).

Regarding claim 3, Rideout further teaches the series connection comprises a daisy chain connection (Fig. 2).

Regarding claims 7 and 27, Rideout further teaches each of the plurality of optical repeaters (i.e., remote unit #1 to remote unit #n, Fig. 2) is coupled with at least one other of the plurality of optical repeaters by an optical link.

Regarding claim 8, Rideout further teaches the optical link comprises an optical cable (Fig. 2).

Regarding claims 9 and 16, Rideout further teaches the last optical repeater is coupled with the base station by an optical cable (Fig. 2).

Regarding claim 14, Rideout further teaches receiving an optical input signal from the second repeater and converting the optical input signal into the second baseband digital signal (Fig. 3A).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-6, 17-22 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rideout et al (US Patent No. 5,880,863) in view of Prior Art Fig. 1 and further in view of Bassirat (US Patent No. 6,507,741).

Regarding claims 4, 17 and 28, Rideout differs from claims 4, 17 and 28 in that he fails to teach a bandpass filter to filter the received RF analog signal and output a filtered RF analog signal, an amplifier to amplify the filtered RF analog signal with a gain and output an amplified RF analog signal, a frequency converter to convert the amplified RF analog signal to the base band signal, and a digital delay device to delay the base band signal. However, Prior Art Figure 1 teaches a bandpass filter (330) to filter the received RF analog signal and output a filtered RF analog signal, an amplifier (340) to amplify the filtered RF analog signal with a gain and output an amplified RF analog signal, a frequency converter (350) to convert the amplified RF analog signal to the base band signal and Bassirat in US Patent No. 6,507,741 teaches a delay device to delay the base band signal (Figs. 4b, 4c, 4d, 5a and 5b, col. 8, lines 29-41). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the bandpass filter to filter the received RF analog signal and output a filtered RF analog signal, the amplifier to amplify the filtered RF analog signal with a gain and output an amplified RF analog signal, the frequency converter to convert the amplified RF analog signal to the base band signal, and the delay device to delay the base band signal as taught by the Prior Art Figure 1 and

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Bassirat in the system of Rideout. One of ordinary skill in the art would have been motivated to do this since the Prior Art Figure 1 and Bassirat suggest that using such the bandpass filter, the amplifier the frequency converter and the delay device have advantage of allowing to selecting the wanted signal, eliminating the noise signal, increasing signal to noise ratio, amplifying the signal and maintain the power level of signal constant and the base determining the location of the subscriber station.

Regarding claims 5 and 19, the combination of Rideout, the Prior Art Figure 1 and Bassirat teaches the digital delay device delays the baseband digital electrical signal to match a round trip delay time of each optical repeater (see Figs. 4b, 4c, 4d, 5a and 5b of Bassirat, col. 8, lines 29-41).

Regarding claims 6 and 18, the combination of Rideout, the Prior Art Figure 1 and Bassirat teaches an automatic gain control (AGC) circuit configured to control the gain of the amplifier wherein the AGC circuit controls the amplifier to maintain a uniform amplitude of the amplified RF analog signal (see the Prior Art Figure 1).

Regarding claim 20, Rideout further teaches the first optical repeater is a final optical repeater in a series connected chain of optical repeaters (Fig. 2).

Regarding claim 21, Rideout further teaches receiving and optical input signal from the second optical repeater and converting the optical input signal to the second baseband digital signal (Fig. 4A).

Regarding claim 22, Rideout further teaches the optical input signal is received from the second optical repeater over an optical cable (Fig. 4A).

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6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rideout et al (US Patent No. 5,880,863) in view of the Prior Art Figure 1.

Regarding claim 12, Rideout differs from claim 12 in that he fails to teach amplifying the RF analog signal with a prescribed gain in accordance with an automatic gain control circuit to maintain a prescribed amplitude of the amplified RF analog signal. However, the Prior Art Figure 1 teaches amplifying the RF analog signal with a prescribed gain in accordance with an automatic gain control circuit to maintain a prescribed amplitude of the amplified RF analog signal. Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the amplifying the RF analog signal with a prescribed gain in accordance with an automatic gain control circuit as taught by the Prior Art Figure 1 in the system of Rideout. One of ordinary skill in the art would have been motivated to do this since the Prior Art Figure 1 suggests that using such the amplifying the RF analog signal with a prescribed gain in accordance with an automatic gain control circuit have advantage of allowing to maintain the power level of signal constant.

7. Claims 13, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rideout et al (US Patent No. 5,880,863) in view of Bassirat (US Patent No. 6,507,741).

Regarding claims 13, 23 and 24, Rideout differs from claims 13, 23 and 24 in that he fails to teach the first baseband digital signal is delayed to match a round trip delay time of at least one other optical repeater coupled in series. However, Bassirat in US

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Patent No. 6,507,741 teaches the first baseband digital signal is delayed to match a round trip delay time of at least one other optical repeater coupled in series (Figs. 4b, 4c, 4d, 5a and 5b, col. 8, lines 29-41). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the first baseband digital signal is delayed to match a round trip delay time of at least one other optical repeater coupled in series as taught by Bassirat in the system of Rideout. One of ordinary skill in the art would have been motivated to do this since Bassirat suggest in column 8, lines 29-41 that using such the delay device has advantage of allowing determining the location of the subscriber station.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rideout et al (US Patent No. 5,880,863) in view of Bassirat (US Patent No. 6,507,741) and further in view of Prior Art Fig. 1.

Regarding claim 25, Rideout as modified by Bassirat differs from claim 25 in that it fails to teach a bandpass filter to filter the received RF analog signal and output a filtered RF analog signal, an amplifier to amplify the filtered RF analog signal with a gain and output an amplified RF analog signal, a frequency converter to converter the amplified RF analog signal to the base band signal. However, Prior Art Figure 1 teaches a bandpass filter (330) to filter the received RF analog signal and output a filtered RF analog signal, an amplifier (340) to amplify the filtered RF analog signal with a gain and output an amplified RF analog signal, a frequency converter (350) to converter the amplified RF analog signal to the base band signal. Therefore, it would have been



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obvious to one having skill in the art at the time the invention was made to incorporate the bandpass filter to filter the received RF analog signal and output a filtered RF analog signal, the amplifier to amplify the filtered RF analog signal with a gain and output an amplified RF analog signal, the frequency converter to converter the amplified RF analog signal to the base band signal as taught by the Prior Art Figure 1 in the system of Rideout. One of ordinary skill in the art would have been motivated to do this since the Prior Art Figure 1 suggests that using such the bandpass filter, the amplifier and the frequency converter have advantage of allowing to selecting the wanted signal, eliminating the noise signal, increasing signal to noise ratio, amplifying the signal and maintain the power level of signal constant.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Imajo (US Patent No. 6,337,754) discloses optical conversion delay amplification system.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

A handwritten signature in cursive script, appearing to read 'Hanh Phan', is written over a horizontal line.

Hanh Phan

Primary Examiner

12/09/2004